



# DVR-104

## DVD-R/RW Drive

### User's Manual



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Product Name:	<b>ASUS DVR-104</b>
Manual Revision:	<b>1.00 E1051</b>
Release Date:	<b>June 2002</b>

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## FCC/CDC Statements

### Federal Communications Commission Statement

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

***WARNING!*** *The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.*

### Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

**This class B digital apparatus complies with Canadian ICES-003.**

## ASUS Contact Information

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General Email: sales@asuscom.de (for marketing requests only)

#### *Technical Support*

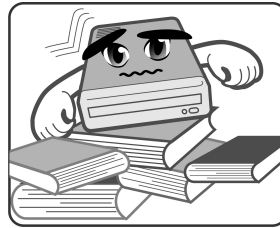
Support Hotline: MB/Optical Drives: +49-2102-9599-0  
Notebook (Tel): +49-2102-9599-10  
Support Fax: +49-2102-9599-11  
Support (Email): www.asuscom.de/de/support (for online support)  
Web Site: www.asuscom.de

## Safety Information

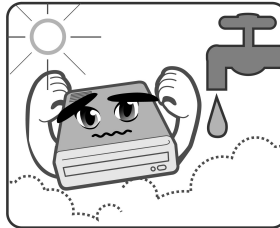
Observe the following precautions before installing and using the ASUS DVR-104 Drive!

### Installation Notices

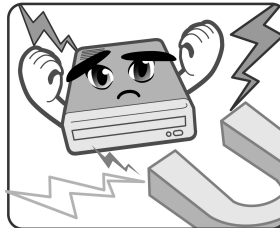
Do not place this device in an unstable position, or in one that vibrates.



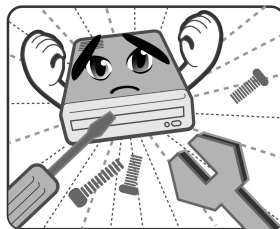
Do not place this device in areas where there is direct sunlight, high humidity, or damp condition.



Do not use or place this device near magnetic fields, televisions, or radios, where there is interference that may affect the performance of the drive.



Do not attempt to disassemble or repair the drive. Opening the drive may result to exposure to laser radiation.



## Safety Information

### SAFETY WARNINGS

- CAUTION**
1. Use of any controls, adjustments, or procedures other than those specified in this manual may result to hazardous radiation exposure.
  2. To prevent exposure to laser emanations (harmful to human eye), do not attempt to disassemble the drive.

### Using the Device

- Do not move the device from a cold to a warm or hot environment. Drastic change of temperature is harmful to the device.
- Before moving or uninstalling the drive, remove a disc from it, if any.
- Prevent liquids or any metal to get into the device. If this situation occurs, contact your retailer for help.
- Do not use any evaporating solvents to clean the device. If you accidentally sprayed any solvent on the device, use a clean cloth to wipe it. You may also use a neutral cleaner to dilute the solvent to easily wipe it from the device.
- Try not to interrupt the supply of power while the device is in reading or writing mode.
- Do not place damaged or warped discs inside the device. A warped disc may break while in use and damage the device.
- Do not place discs into the device immediately if they came from a cold environment, specially during cold seasons. Wait until the discs have reached room temperature.

## Package Contents

Upon opening your ASUS DVR-104 drive package, check if all the following items are present and in good condition. If any of the items is damaged or missing, contact your retailer immediately.

- ASUS DVR-104 internal IDE drive
- Cable Set (IDE cable + 4 pcs. mounting screws + Audio cable)
- Emergency eject pin and instruction
- ASUS DVD-R blank disc
- ASUS DVD-RW blank disc
- User's Manual (English and Traditional Chinese)
- Bundled software CD



*The above items are available in retail boxes only.*



# Welcome!

## Thank you for buying the ASUS DVR-104 Drive!

To ensure proper installation and use of this device, read the instructions and other important information contained in this manual.

## Product Introduction

### Specifications

The DVR-104 has the following specifications.

- **Write Speeds**  
2X/1X on DVD-R; 1X on DVD-RW; 4X/8X on CD-R; 4X on CD-RW
- **Maximum Read Speeds**  
6X on DVD-ROM; 24X on CD-ROM
- **Interface** Enhanced IDE (ATAPI)
- **Data Buffer Size** 2 MB (Write), 512 KB (Read)
- **Random Access Time** DVD-ROM: 200 ms; CD-ROM: 180 ms
- **Application discs** DVD Single layer/Dual layer/80mm disc  
DVD-R (In case of write, 650mm disc only)  
DVD-RW, CD-ROM Mode 1  
CD-ROM/XA Mode 2 (form 1, form 2)  
Photo CD (single and multiple session)  
CD-DA, CD-Extra (CD Plus), Video CD,  
CD-Text, CD-R, CD-RW
- **Recording Form** DVD-R: DAO, Incremental Recording,  
Multi-Border Recording  
DVD-RW: Restricted Overwriting  
CD-R/RW: DAO, TAO, SAO, Packet Write
- **O/S Compatibility** Windows 98/98SE/ME/2000/NT 4.0/XP
- **Mounting Orientation** Vertical/Horizontal
- **Dimensions** 148.0 (w) x 42.3 (h) x 197.7 (d) mm
- **Mass** 1200 g (2.65 lbs)



Refer to the section "Technical Information" on page 23 for detailed specifications.

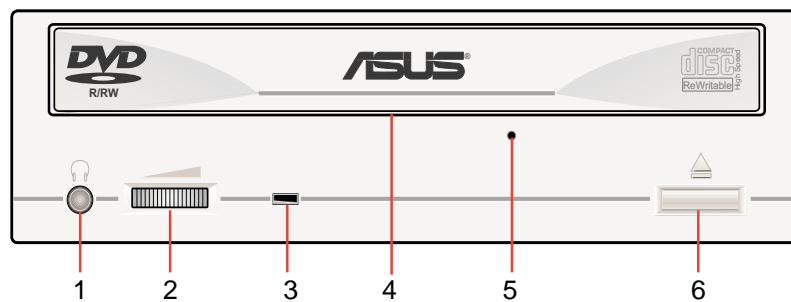
## Features

The ASUS DVR-104 is a DVD-R/RW drive with 2X-DVD write, 1X-DVD rewrite, 6X-DVD read, 8X CD-write, 4X CD-rewrite and 24X CD-read capabilities. The drive complies with the Enhanced-IDE Attachment Packet Interface (ATAPI) specification and comes equipped with the latest innovative technologies in DVD recording.

The ASUS DVR-104 includes the following features:

- Wide compatibility: DVD-R, DVD-RW, DVD-ROM, CD-R, CD-RW, CD-ROM
- Buffer underrun errors prevention for CD and DVD recording
- Supports UDMA33
- Vertical mounting
- User-Oriented front panel design
- Equipped with Cooling fan and disc clips for stable performance
- Free bundle of latest CD/DVD recording/editing software
- Supports DAO, TAO, SAO, Packet Write
- Supports Windows 98/98SE/ME/2000/NT 4.0/XP

## Front Panel



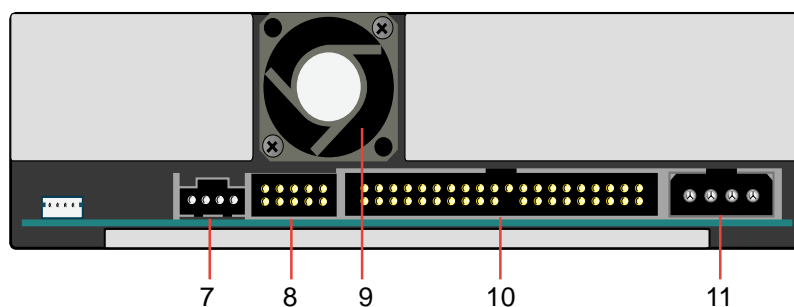
- 1. Headphone Jack**  
This jack allows you to connect a headphone with a stereo mini-plug.
- 2. Headphone Volume Dial**  
This volume dial allows you to control the volume of the headphone connected to the drive. Turning the dial to the left decreases the volume, turning to the right increases volume.
- 3. READ/WRITE Indicator**  
This LED turns Green when data is being read from disc and turns Orange when data is being written on disc.
- 4. Disc Loading Tray**  
This tray holds the read/write media.  
Open the loading tray by pressing the Open/Close/Stop button, then place a CD or DVD with the label side up. Press the Open/Close/Stop button or push the front part of the tray to load the tray back in place.
- 5. Emergency Eject Pinhole**  
In cases when you cannot eject a disc from the drive using the eject button due to power failure or software problems, insert a pin or a paper clip into this hole to manually eject the tray and the disc.



*Make sure the power of the drive is turned off and wait more than one minute till the disc rotation is stopped.*

- 6. Open/Close/Stop Button**  
Press this button to open/close/ the disc tray or to stop drive operation.

## Rear Panel



### 7. Audio Output

This connector is for an analog audio output cable. This connector is compatible with "Molex 70553".

Pin	Name	Description
1	L	Left channel audio output
2 & 3	G	Ground
4	R	Right channel audio output

### 8. Device Configuration Jumper

These pins allow you to select either Master, Slave, or Cable Select mode for the DVD-R/RW device. (Refer to page 15 for jumper settings)

Pin	Name	Switch Status	Description
1-2	MA	ON	Master mode
3-4	SL	ON	Slave mode
5-6	CS	ON	Cable select mode
7-8, 9-10		Reserved	

### 9. Cooling Fan

This fan is for maintaining optimum drive temperature. Make sure that the fan is not blocked by cables or other objects inside the system.

Drive Status	Fan Status
No disc is loaded, Stand-by	Stopped
Idle, Read, Write, Seek	Rotating

## 10. Host IDE Interface

This connector is for a 40-pin IDE cable to connect the drive to the IDE interface on the motherboard.

## 11. DC Input

This DC connector is for a 4-pin power cable from the system power supply.



*The jumper pins on the leftmost part of the rear panel are factory test pins. DO NOT cover these pins with jumper blocks.*

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# Installation

## System Requirements

Before installing and using the DVD-R/RW drive, make sure that your computer system meets the following requirements.

- IBM-compatible Pentium III 700MHz or Celeron 700MHz or AMD Duron 850 MHz or higher PC
- Windows 98/98SE/ME/2000/NT 4.0/XP operating system
- At least 64MB RAM (128MB recommended)
- An empty 5.25-inch external drive bay
- HDD empty storage capacity of 100MB or more  
Average seek time: 20ms or less  
Transmission rate: 2 MB/s or more



*Do not use a hard disk that calibrates thermally during operation.*

- Recommended media:

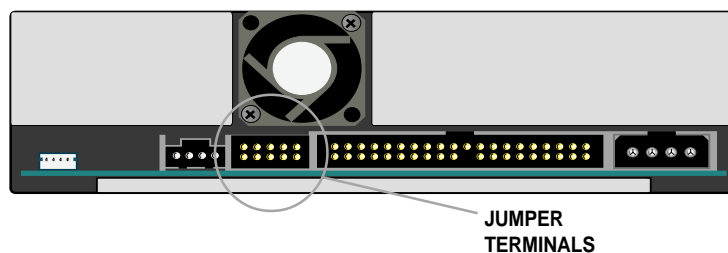
DVD-RW	Pioneer Video, TDK, Mitsubishi Chemical, Japan Victor Company
DVD-R	Mitsubishi Chemical, Mitsui Toatsu Chemical, Hitachi Maxwell, Panasonic, Pioneer Video, Taiyo Yuden, TDK
CD-RW	Acer, CMC, Fuji Photo Film, Hitachi Maxell, Mitsubishi Chemical, Princo, Prodisc, Ricoh, Ritek, TDK
CD-R	CMC, Mitsubishi Chemical, Mitsui Toatsu Chemical, Fuji Photo Film, Hitachi Maxwell, Kodak, Pioneer Video, Princo, Prodisc, Ricoh, Ritek, SONY, Taiyo Yuden, TDK

## Setting the Jumper Terminals

Configure the jumpers to set the device to master or slave mode before physically installing it to your computer chassis. Use jumper blocks to short the pins to your desired setting.

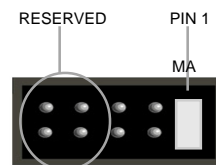


*Make sure to correctly put the jumper blocks over the pins. Failure to do so may cause irreparable damage to the drive!*



### Master Mode

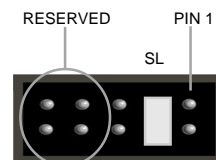
Cover the two pins labeled MA (see illustration) to set the DVD-R/RW drive as a secondary master drive. This is possible only if your computer supports four IDE devices. The hard disk in the computer is set as Primary Master.



### Slave Mode

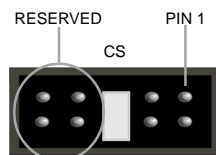
Cover the two pins labeled SL (see illustration) to set the DVD-R/RW drive as a slave device if your computer supports only two IDE devices.

If your computer supports four IDE devices, this setting sets your DVD-R/RW drive either as a Primary Slave or a Secondary Slave.



### Cable Select Mode

Cover the two pins labeled CS (see illustration) if your computer supports a Cable Select (CSEL) signal. You need an exclusive interface cable for this setting. Refer to your computer manual for details.



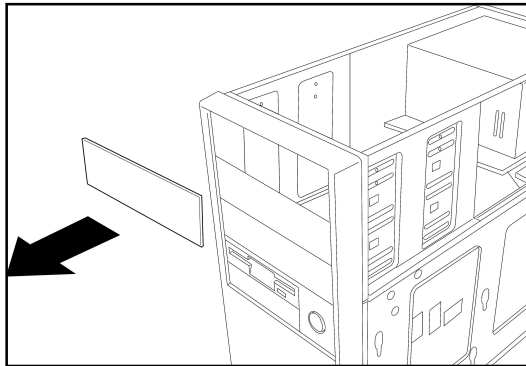
## Installing the DVD-R/RW Drive

Follow these steps to install the drive into the computer chassis.

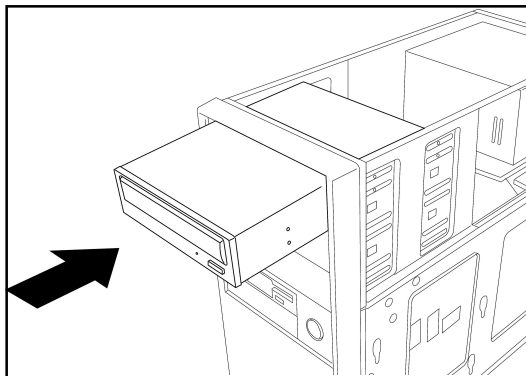


*Refer to your computer manual for specific instructions on opening the chassis and installing drives.*

1. Remove the cover of an empty 5.25-inch external drive bay.



2. Carefully insert the DVD-R/RW drive into the bay and push it inward until it is flushed to the chassis front panel. The holes on the sides of the drive should align with the holes on the drive bay.

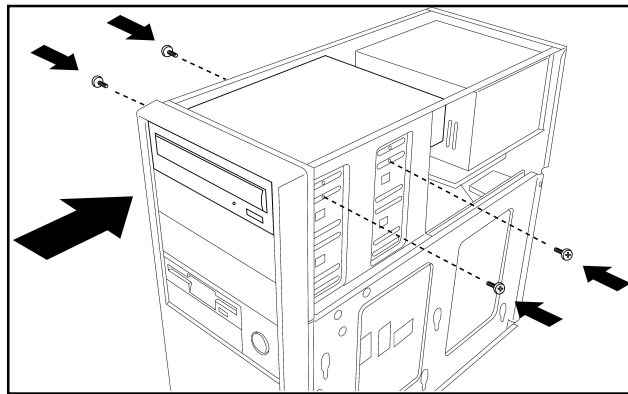




3. Secure the drive with screws that came with the drive package. Use two screws on each side of the drive.



*Depending on the space on your chassis, you may need to connect the drive cables before securing the drive into the chassis. For cable connections, proceed to the following section, "Connecting the Drive Cables."*

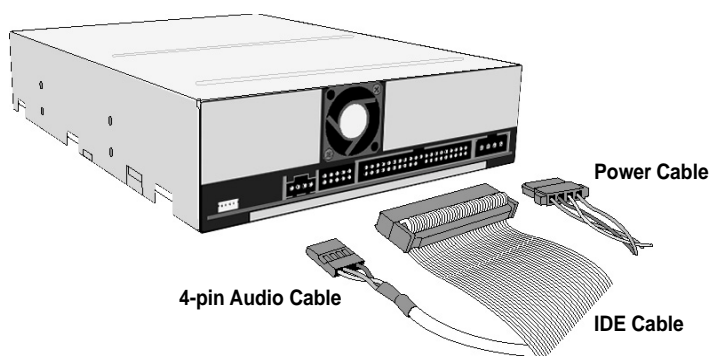


## Connecting the Drive Cables

1. Connect the power cable plug to the power connector on the rear panel.
2. Connect the 40-pin IDE cable plug to the IDE connector, matching the red pin stripe on the cable with Pin 1 on the connector.
3. If your computer has a sound card or an onboard audio feature, connect an audio interface cable to the 4-pin analog audio connector on the rear of the drive. Connect the other end of the audio cable to the connector on the sound card or on the 4-pin CD connector on the motherboard.



*All the cable plugs are slotted so that they fit in only one orientation. If a plug does not fit in completely, try reversing it. DO NOT use too much force when fitting the cable plugs.*

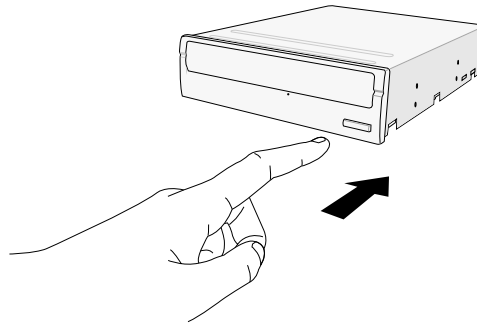


*Replace the computer cover according to your computer manual.*

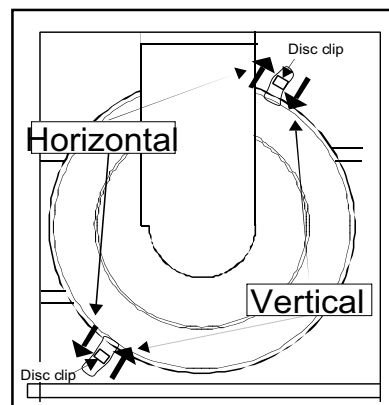
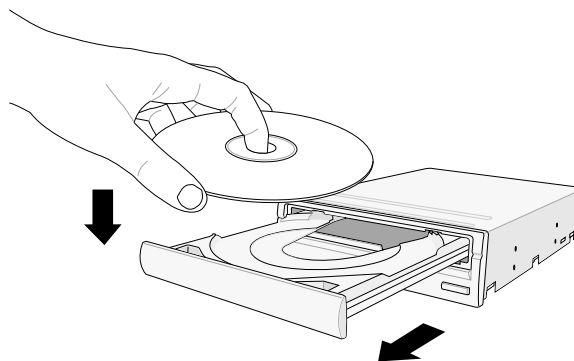
## DVD-R/RW Drive Basics

### Placing a Disc into the Drive

1. Press the eject button on the front of the drive to eject the tray.



2. When the drive tray ejects out of the drive, place the disc on the tray with the label (printed) side up.



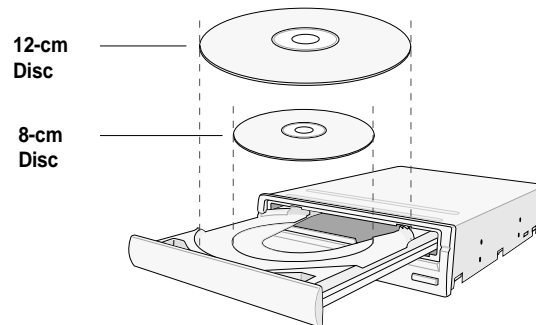
#### Horizontal or Vertical Mounting

*When the drive is installed horizontally, set the two disc clips to outer side. When the drive is installed vertically, set the two disc clips to inner side.*

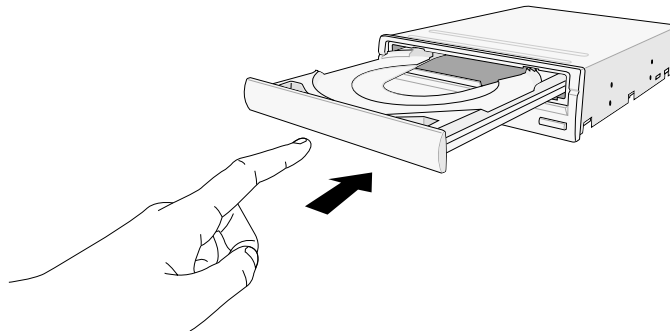
*In vertical operations, the clips hold the edge of the disc. When the disc is clamped on the spindle motor, the clips release the disc automatically.*



If you are using a 12-cm disc, place it on the tray making sure that it fits the outer circular border. This border helps hold the disc in place. If you are using an 8-cm disc, place it on the inner circular border on the tray.



3. Press the drive eject button or lightly push the center of the drive tray to replace the tray inside the drive.



## Ejecting a Disc from the Drive

1. Press the eject button on the front of the drive to eject the tray.
2. Carefully remove the disc from the tray.
3. Press the drive eject button or lightly push the center of the drive tray to load the tray back into the drive.

## Using the Emergency Eject Pinhole

The emergency eject pinhole on the front of the drive allows you to manually eject the drive tray and remove a disc from the drive in the following instances:

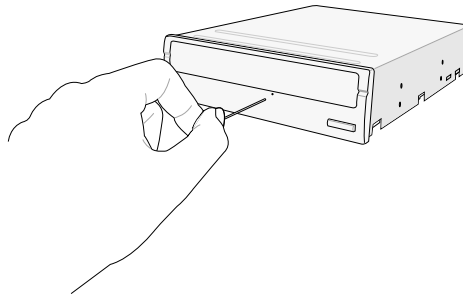
- supply of power to the computer is cut due to electrical power outage
- the drive malfunctions



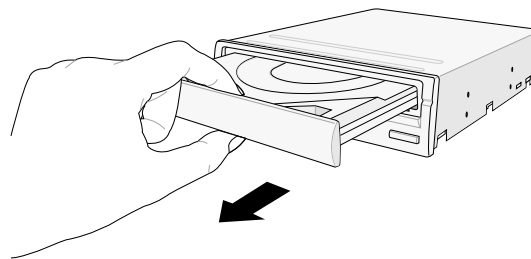
*Use the manual method only as a last resort when the eject button does not work. Make sure that you have turned off your computer before ejecting the drive tray.*

Follow these steps to eject the drive tray using the emergency pinhole.

1. Insert the eject pin that came with the drive package. You may also use a paper clip or any pointed rod small enough to fit into the emergency pinhole.



2. Carefully pull the tray out and remove the disc.



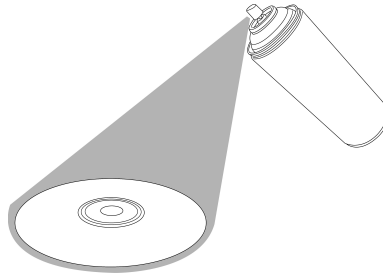
*Do not force the tray open; wait until the eject pin has dislodged the tray to avoid breaking the tray panel.*

## Using Compact Discs

Take note of the instructions in this section when using compact discs. These instructions will help you avoid damaging the discs and your DVD-R/RW drive.

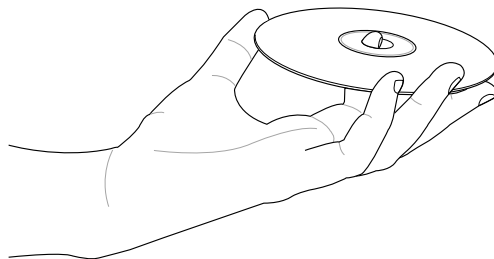
### Cleaning a Disc

Spray the disc with compressed air for about five seconds to get rid of the dust on a disc.



### Handling a Disc

Hold a disc by the edges. Do not touch the disc surface.



# Technical Information

## Environmental Specifications

<b>Temperature</b>	Operation:	+5°C to +45°C
	Storage:	- 20°C to +60°C
<b>Humidity</b>	Operation:	5% to 85% non-condensing
	Storage:	5% to 90% non-condensing
<b>Vibration</b>	Operation:	0.25G peak at 10 ~ 300 Hz
	Storage:	1.5G peak at 10 ~ 300 Hz
<b>Impact</b>	Non-operation:	1 oct/min – no damage Less than 50G – (at 11ms/half sine wave, 3 shock/each side)
	Packaged:	1 oct/min – no damage 91 cm high – (1 corner, 3 edges, 6 surfaces)
<b>Acoustic</b>	Access mode:	45.5 dB TYP
	Read mode:	45 dB TYP
<b>Reliability</b>	MTBF:	60,000 power on hours
	ODC (Read):	20% of power on time
	ODC (Write):	2% of power on time
<b>Mean Time To Repair (MTTR)</b>		30 minutes

\* ODC - Operating Duty Cycle

## Electrical and Audio Specifications

<b>Power Source</b>	Voltage	+5V DC	+12V DC
	Tolerance	+/- 5%	+/- 10%
	Ripple	150m Vpp	300m Vpp
	Rating	900mA	1500mA
<b>I/O Terminal</b>	Power connector	4-pin +5V, +12V	
	ATAPI terminal	40-pin	
	Audio out	4-pin (analog) 2-pin (digital)	
<b>Audio</b>	No. of channels	2 (stereo)	
	Sampling frequency	44.1 kHz	
	Quantization	16 bits	
	Distortion	0.2% max. (at 1 kHz)	
	S/N ratio	70 dB	
	Output: Headphone	0.6 V rms (typical)	
Line Out	0.7 V rms (typical)		

## DVD Region Codes

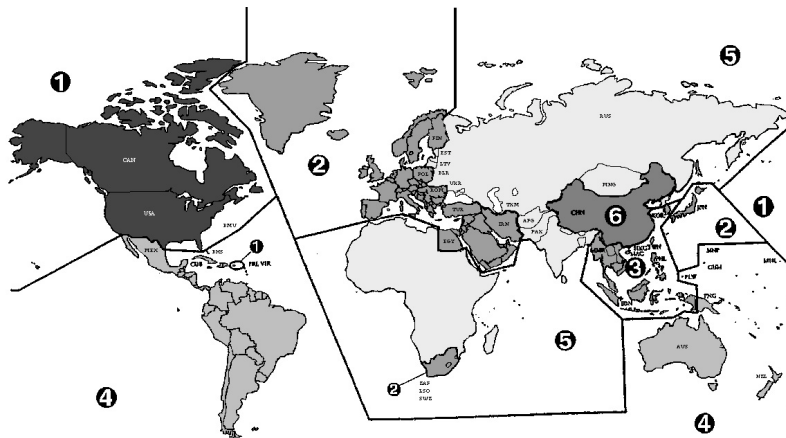
Region codes are part of the DVD standard. However, Region code on DVD discs are optional. DVD discs with no specified region code can be played on all DVD players.

The world is set up into regions according to DVD titles. There are six regions around the world as illustrated by the map below.

This DVD drive can be changed to play a DVD from any region in the world but can ONLY be changed five times. This restriction makes the drive adaptable for use in any region while still maintaining compliance with RPC-II regulations.



*The ability to switch from one region to another is not an ongoing feature. Please set the drive to your local region only or you may risk setting the drive permanently for a region that is not compliant with the media available in your part of the world.*



Region Code	Area
1	U.S., U.S. Territories, Canada
2	Europe, Middle East, Japan, Egypt, S. Africa, Greenland
3	South Eastern Asia, Taiwan, Hong Kong, Korea
4	Australia, New Zealand, Latin America, Pacific Islands
5	(former Russia), Eastern Europe, India, Africa, North Korea
6	China